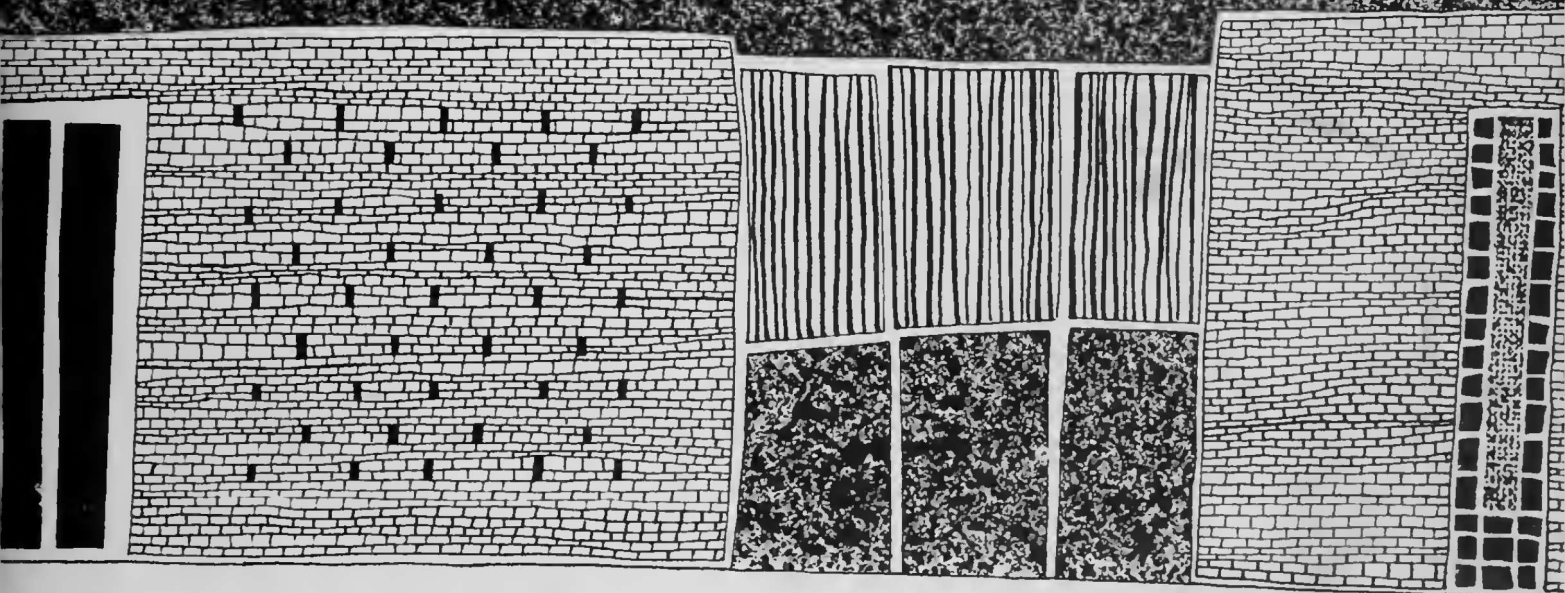


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THREE PLANS FOR SURVIVAL IN A NUCLEAR ATTACK





STANFORD RESEARCH INSTITUTE

MENLO PARK, CALIFORNIA

OFFICE OF THE PRESIDENT

March 15, 1960

To the SRI staff:

We at SRI recognize that nuclear attack upon the United States is a real possibility. At the same time, we have increasingly realized that recovery from such an attack is just as real a possibility, given a degree of careful forethought. People are our nation's most precious resource. In disaster, organized groups of people accustomed to working together can be invaluable. Our understanding at SRI of both economic and technological problems would make us particularly important to our country in case of a nuclear attack. Thus, we feel not only a personal but also a national responsibility to use whatever means we can make available to increase our chances of survival and our ability to continue working together as a group. At the same time, and as importantly, none of us can be effective without assurance of our families' safety, and we therefore want to plan not just for ourselves but for our families as well.

Fortunately we live in an area geographically so related to potential enemy targets that it would be possible to save lives. On the basis of our research for various defense agencies, we have been able to design and implement a program for the protection of SRI staff and families that would make use of SRI basements for shelter. I urge everyone to familiarize himself with the plan described in the following pages.

Although we are particularly anxious to preserve the staff in its working form in case of emergency and would like those who could to come to the SRI basement, we also realize that some staff members live too far from the Institute to make this their best alternative. Two other plans, evacuation and use of home shelters, are presented for consideration. In most cases, the best course of action would be clear; where there may be a question, however, I hope you will plan to participate in the SRI basement program.

In any event, everyone should select some plan and be prepared to put it into action. Your chance of surviving a nuclear attack is negligible if you are not prepared for it.

Sincerely,

C. Rindley Carter

LIVES

THREE PLANS FOR SURVIVAL IN A NUCLEAR ATTACK

PREPARED FOR SRI STAFF MEMBERS AND THEIR FAMILIES

by

MANAGEMENT SCIENCES DEPARTMENT,
DIVISION OF ECONOMICS RESEARCH

under the direction of

ROGERS S. CANNELL, Manager,
INDUSTRY AND CIVIL DEFENSE RESEARCH

March 1960

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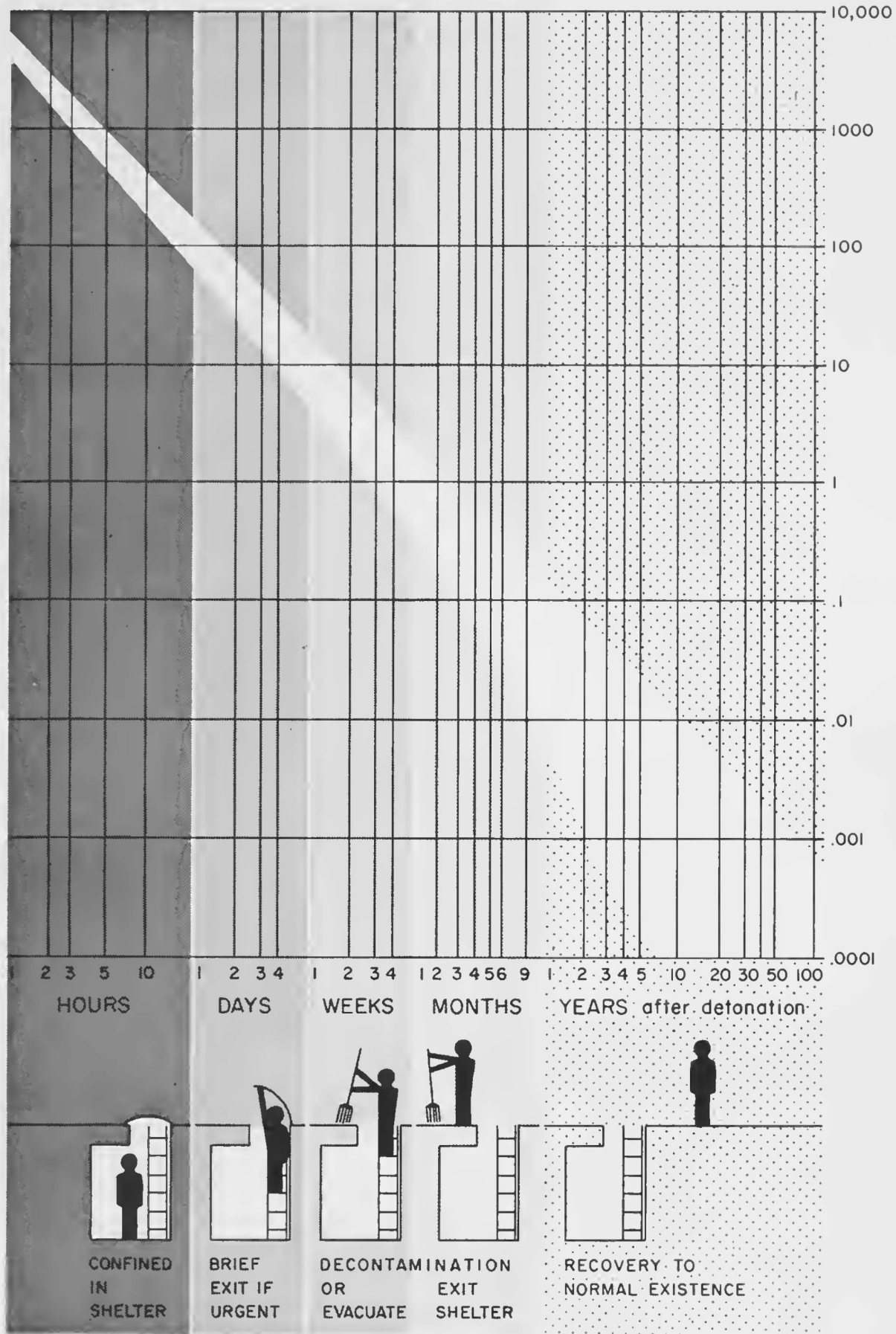
The physical ability of our society to survive even the most terrifying nuclear attack is a factor of crucial importance to our national security. The ability to survive, coupled with the will to do so, ranks next to military power in the nuclear age as the best deterrent to aggression and the best assurance of final victory over any enemies who might attack us.

There has been a great deal of publicity about the horrors of a possible nuclear war, but not enough about the positive steps which can be taken to reduce or avoid some of the horrors. In contrast to what you may have heard, a very high degree of protection from radioactive fallout can be achieved at very low cost; bombs would probably destroy certain population centers but many people could survive with proper shelter, supplies, and organization. Nuclear attack is not something we must accept helplessly, but something we can combat in advance with knowledge and materials already at hand.

This booklet offers all the information that can be included in a few pages to enable you to survive a nuclear attack on the Bay Area. Three possible plans for survival—SRI basement shelter, evacuation, and home shelter—are presented, together with instructions and lists of necessary supplies to make them effective. In Sections I through V, the booklet provides the facts and figures for each course of action so that you can choose the one that is best for your family. Section VI is a Survival Handbook for those who do not seek shelter at SRI.

Preparation of this booklet followed a study to determine whether low-cost civil defense measures could protect SRI staff and their families from atomic attack. The study was based on the results of a number of research projects conducted by SRI for the Office of Civil and Defense Mobilization (OCDM) and the Army Signal Corps, and on planning material provided by OCDM. In addition, many specialists throughout the Institute contributed to give the study particular relevance to attack conditions which could be expected in our local area. An examination of possible enemy intents, enemy capabilities, and the local target system was made in order to define the hazard. A review of possible civil defense measures and of availability of critical facilities, supplies, and equipment indicated that good planning and careful use of resources could save most SRI families by one or more of the three plans presented here.

RADIATION INTENSITY (r/hr)



Permissible activity following 6,000 r/hr initial radiation . . .

Fire Hazard

Fire storms such as were experienced in Nagasaki and Hamburg in World War II would be a definite hazard of nuclear warfare in some parts of the United States. However, the density of housing on the Peninsula appears to be low enough to provide insufficient combustible material to cause a fire storm anywhere in our area.

At the same time, it is highly probable that homes within the blast area of a target would be destroyed by fire as a result of thermal radiation. The blast shelters described in Section V and the SRI basement are fireproof. Fallout shelters within a blast area would be destroyed by blast, of course; however, some fallout shelters remaining on the periphery of the blast area could be ignited by thermal radiation. This fact should be taken into account in any choice of shelter.

Tidal Wave Hazard

Areas along seacoasts must consider the possibility of blast-caused tidal waves. Such waves could, of course, flood basement shelters.

Tidal waves would be unlikely to nullify the usefulness of underground shelter in this area for two reasons. In the target area of Moffett Field, the Bay is very shallow; there is insufficient water at this end of the Bay to cause a tidal wave. In addition, even weapons falling in the vicinity of San Francisco would blow a large portion of the Bay water into the air in a cratering type of action that would increase the fallout hazard but diminish a potential tidal wave. These facts, combined with the many barriers between the Bay and SRI, indicate that there is not likely to be enough water in the Bay to create a wave of sufficient mass to reach more than a few hundred feet inland, let alone to the 60 ft. elevation of the SRI basement.

Bacteriological and Gas Hazard

Bacteriological and gas warfare have severe logistical limitations and are useful primarily for tactical purposes. They are particularly impractical for use against U. S. retaliatory bases since they would not become effective immediately and would fail to prevent retaliatory attack. Thus, enemy use of these techniques is unlikely for the present, and the survival plans proposed in this booklet do not provide for bacteriological or gas hazards. When intelligence data indicate greater likelihood of such an attack, appropriate measures will be included in the plans.

Weather Hazards

Weather conditions should not affect your choice of survival plan.

● *Wind.* Although the direction of *stratospheric* winds does affect location and intensity of fallout, fallout areas cannot be determined from observing *surface* winds.

● *Rain.* Within a considerable area of ground zero, the intense heat of the fireball prevents rain. Fallout then begins at about 40,000 ft. or higher, and its distribution is already largely established by the time it reaches the level of rain clouds which are usually located a few thousand feet above ground level. Rain therefore has no effect on initial intensity or general distribution of fallout. Once fallout has reached the ground, however, rain does affect distribution by washing down high surface areas and carrying fallout into lower surface areas such as gutters and gulleys. Depending on the location of your shelter, therefore, rain action may either extend or shorten your shelter confinement.

THE DIRECTION OF STRATOSPHERIC WINDS
AFFECTS THE LOCATION AND INTENSITY OF FALLOUT

FALLOUT AREAS CANNOT BE DETERMINED
FROM OBSERVING SURFACE WINDS

Careful planning and preparation are necessary if Bay Area residents are to avoid the devastating effects of fallout and blast that would result from nuclear attack. There are essentially three courses of action open to you and your family: to seek shelter with others, to prepare a family shelter, or to leave the area.

This section outlines plans for each course of action and gives you enough information so that you can choose which is best for you. In addition, it covers three other factors which must be considered in connection with any effective survival plan: warning, family assembly, and traffic.

One plan, offering collective shelter for staff members and their families in the SRI basement, is recommended. However, those who live a great distance from SRI or who have facilities at home may choose one of the alternative programs. The decision is up to you.

Plan I: SRI Basement Shelter

This plan is very simple: learn the warning signals, move immediately to assemble your family at SRI, and everything else required for your survival will be provided in the SRI basement. (You may be more comfortable, however, if you provide yourself with a few supplementary supplies, including food to augment the minimum ration for two weeks, bedding, clothes, eating utensils, and other personal items.)

Shelter in the SRI basement is the recommended plan because:

- ① It offers adequate protection from both blast and fallout for any type of attack expected in the Bay Area.
- ② It requires the least preparation and knowledge on the part of the staff.
- ③ It is virtually free to the staff.
- ④ It is easier to survive in an organized group than alone.





Plan II: Evacuation

Evacuation to Santa Cruz-Monterey is probably the best plan for staff members who live south or west of Los Altos or for non-SRI persons who will not have access to our basement with its supporting supplies, equipment and personnel.

However, the evacuation plan is not the best alternative for most SRI personnel because:

- ① The evacuee must rely completely on his own resources.
- ② Traffic delays along congested evacuation routes would subject most evacuees to a fatal period of risk.
- ③ Both fallout shelter and housing in the Santa Cruz-Monterey area will be severely taxed.
- ④ There is a 10 percent chance that wind actually will carry radiation toward the Monterey Peninsula.

Plan III: Home Shelter

The major advantage of a home shelter is that it reduces the amount of warning time necessary in order to assure safety of those at home. There are two disadvantages. First, home shelter is *relatively* expensive; second, it puts you on your own in the period after attack.

Permanent home shelters are described in some detail in Section V. Blast shelter, particularly, is recommended for staff members who live close to Moffett Field, since the probability of being a blast fatality near there once a bomb goes off is rather high. In addition, those who live south of the Moffett Field target area will probably be subjected to high levels of fallout but may not have enough time in which to reach SRI. Fallout shelter in that area would aid survival if one lived through the blast.

(If you are caught in an attack and have made no advance preparations at all, some of the emergency expedients mentioned in Part 1 of the survival handbook may help keep you alive.)

SRI is providing the following facilities to insure survival of all participants in the basement shelter plan.

Blast and Fallout Protection

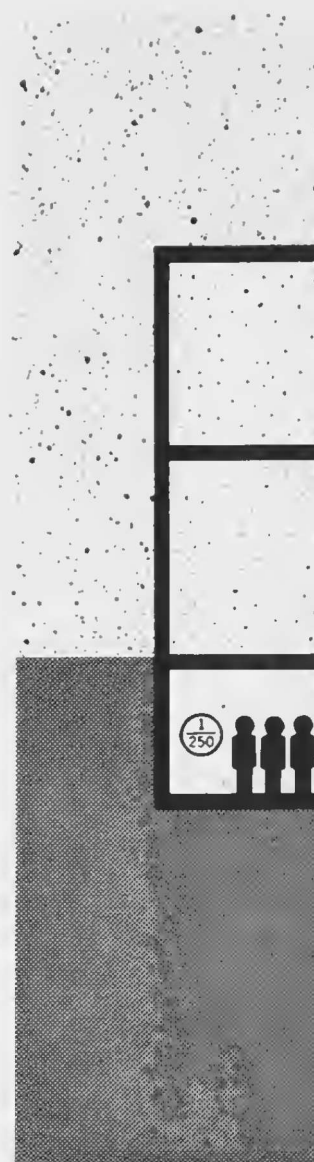
The SRI basements would offer adequate protection from blast effects of any attack on local targets with the unlikely exception of direct attack on Palo Alto.

Protection from fallout on the building roof is provided by the 40 feet between the roof and the basement floor, and the total of 13" of concrete in the roof and two floors above the basement. The basement floor is an average of 15 ft. below grade and is shielded by the surrounding earth from radiation on the ground. The total shielding thus provided would reduce radiation to 1/250 the outside levels on the basis of the standards set forth in the *OCDM Guide for Fallout Shelter Surveys*.

If the Bay Area were attacked, the effective radiation dose might reach a maximum of 25,000 roentgens (R). Were this upper limit of radiation present in our area, personnel in the basement would receive a total dose of 100 R, which is the minimum sickness dosage of radiation. Thus, even under this worst condition, SRI basement shelter would mean the difference between casualties and fatalities; under less severe conditions, it would prevent even sickness dosage.

Space

The basement of Building 1 contains approximately 30,000 sq. ft. of usable floor space. Allowing 10 sq. ft. per person, our present basement can provide shelter for a maximum of 3,000 people or roughly $\frac{2}{3}$ of the staff members at the Menlo Park offices and their families. The plans for the new building include a basement of approximately 24,000 sq. ft. that will accommodate an additional 1,500 to 2,400 people. With this additional space, all of the staff and their families can be sheltered.



Ventilation

The basement is large enough to provide adequate air circulation for 3,000 people without mechanical ventilation. However, future plans call for installation of standby power so that the present ventilation system for the basement will work in an emergency. That change will make the shelter more comfortable as well as increase its capacity.

Food and Water

A ten-day minimum-diet dry ration for 3,000 people has been stored in Wing B of Building 1. Upon completion of the new building, similar provision will be made for the 1,500 additional people who can then be accommodated.

Water will be available from an emergency well located between Wings E and F of Building 1.

Storage for Footlockers

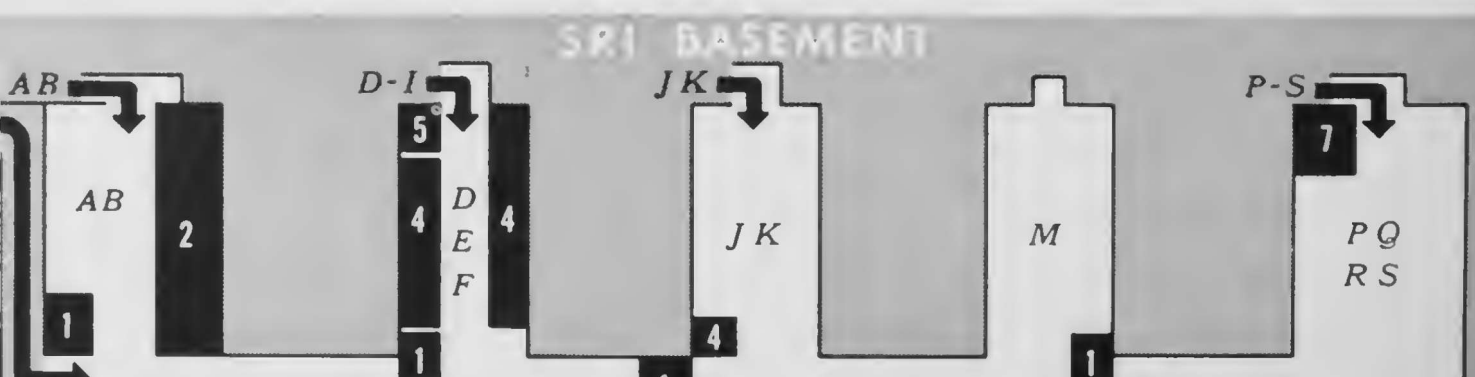
Space is now available for each family to store one footlocker for supplemental food and other survival supplies.

Medical Services

A number of doctors and their families have been invited to join in our basement shelter plan to provide medical services. SRI will provide the emergency medical supplies recommended by the participating doctors.

Sanitation

Toilets and standby power to operate sewage pumps have been provided for the basement. The normal storage of sanitary supplies is being moved to the basement, and inventories will be kept large enough to supply 3,000 people for two weeks. Provision for an additional 1,500 people will be made upon completion of the new building.



Standby Power

SRI has located a motor generator set in the Building 1 basement to provide power for pumping water, communications, lighting, and sewage disposal. Sufficient fuel to operate the generator for a two-week period has been stored adjacent to Building 1.

Communications

The basement is provided with shortwave transceivers to send and receive information about the attack. We will have standby emergency communication with the San Mateo and Santa Clara County Sheriffs' offices, the Palo Alto and Menlo Park police, the Red Cross, and the Military Amateur Radio net.

Evacuation Support

Communication, technical data, and organizational plans will be provided by SRI if evacuation of personnel from the basement shelter is the advisable postattack course of action.

Monitoring

SRI owns 16 radiation instruments with which to measure the radiation hazard. These instruments are stored and maintained in regular use in the Atomic Physics Laboratory and, in event of attack, will be brought to the basement shelter by the laboratory personnel. Additional instruments are permanently stored in the basement.

Personal Decontamination

Families seeking shelter in the SRI basement may be exposed to fallout enroute to the shelter. Shower facilities and decontamination procedures will be set up so that radioactive particles which have become attached to the skin, eyes, mucous areas, hair, and clothes of shelter occupants may be removed.

VENTILATION FAN
SUPPLY AND STORAGE
MEDICAL SUPPLIES
COMMUNICATION AND CONTROL CENTER
FOOD STORAGE
EMERGENCY WELL
STANDBY POWER

Decontamination Support

Tools, equipment, and instructions will be available if decontamination is the advisable postattack course of action.

Damage Assessment

Present and planned SRI computers will be located above ground. However, steps will be taken to provide shielding and standby power for the computer location in the new building so that SRI can assist government in postattack damage assessment estimates and rehabilitation planning. In the meantime, hand procedures have been developed and the necessary data, together with instructions for use, have been stored in the basement of Building 1.

Staff Organization

A group responsible for preattack planning and postattack operation of the SRI basement shelter has been organized. The group is to have an operational plan in readiness at all times; postattack, it will assign tasks and allocate supplies.

The names and individual responsibilities of the planning group are listed here so that any suggestions you have may be directed to the appropriate person.

INFORMATION: JOHN E. WAGNER—DAVID C. FULTON

Communication of the SRI basement shelter plan to SRI staff and their families.

Assistance to other planning staff members in communication of essential information to those requiring it.

WARNING: VINCENT SALMON

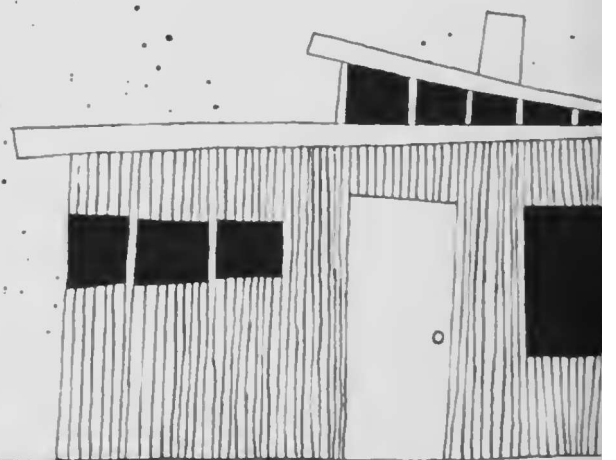
Establishment of SRI warning system for staff.

Investigation of ways of improving reliability and recognizability of community warning signals for SRI family members at home.

POLICE: THOMAS J. O'NEILL

Setting up of traffic control procedures.

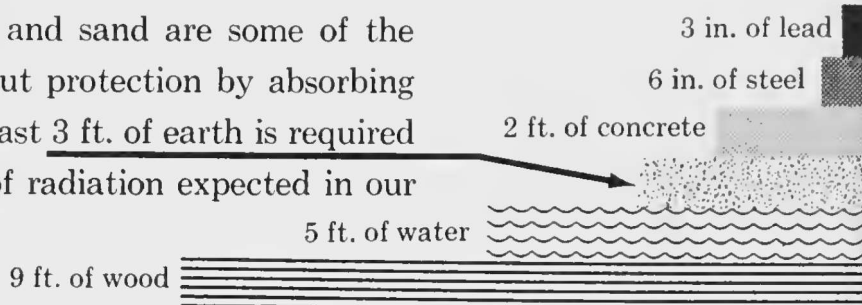
V HOME SHELTER



Illustrated in this section are several family shelters capable of providing protection from blast, fallout, or both. All are relatively low in cost for the protection they offer, although blast protection in general is more expensive than fallout protection and is virtually valueless without a good warning system. You could build most of these shelters yourself; a few would require a contractor's help. All would require a building permit. (Emergency fallout protection expedients are described in the Survival Handbook.)

Shelter Design

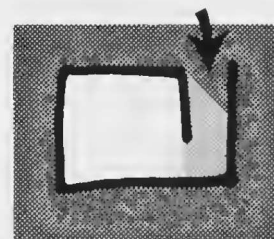
● **Materials.** Concrete, brick, earth, and sand are some of the materials heavy enough to afford fallout protection by absorbing radiation. A density equivalent to at least 3 ft. of earth is required to provide protection from the levels of radiation expected in our area.



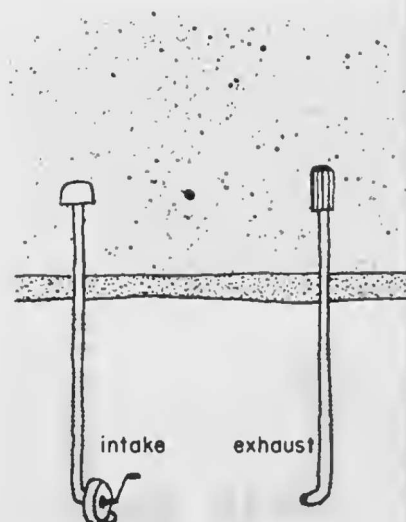
● **Floor Space.** A shelter should provide 10 sq. ft. of floor space per person. ○○○○○○○○○○



● **Entrance Arrangement.** The entrance should have at least one right-angle turn because radiation scatters somewhat as light does: some will go around a corner; the rest continues in a straight line.



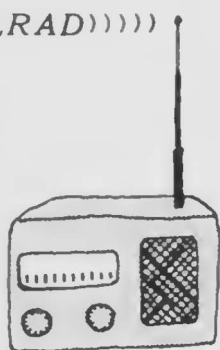
● **Ventilation.** In the *concrete block basement shelter*, ventilation is provided by vents in the wall and by the open entrance. A blower may be installed to increase comfort. A hand-operated blower is essential for the *double-wall shelter* and for the *underground shelters*. It should provide not less than 5 cu. ft. per minute of air per person. Such a blower would cost on the order of \$25. The *reinforced concrete pipe shelter* roof entrance may be opened for ventilation after fallout has settled; the outside entries of all other shelters would admit radiation from fallout on the ground so should not be used for ventilation.





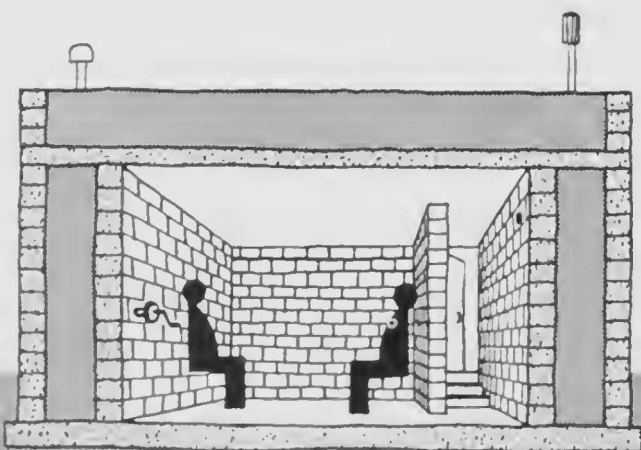
● *Lighting.* Continuous low-level lighting may be provided in the shelter by means of a 4-cell hot-shot battery wired to a 150-milli-ampere flashlight bulb. Tests have shown that such a device, with a fresh battery, will furnish light continuously for at least 10 days. With a spare battery, a source of light for 2 weeks or more would be assured. A flashlight or electric lantern should also be available for those periods when a brighter light is needed. There should be a regular electric outlet in the shelter as power may continue in many areas. A hand generator, similar to those used on life boats, could also be provided at a cost of approximately \$35.

CONELRAD))))

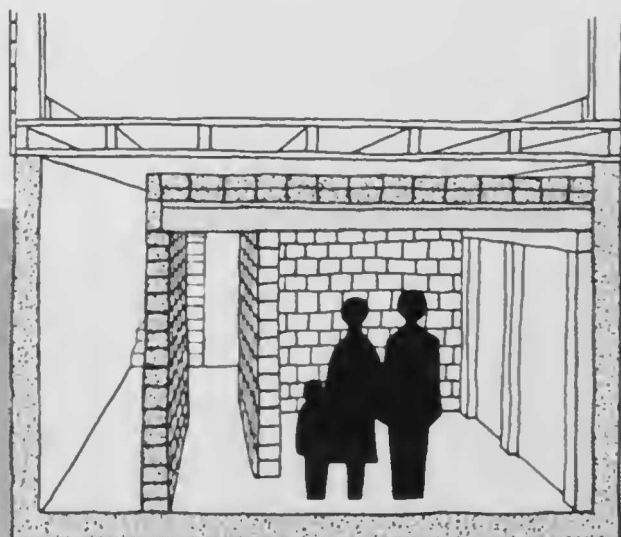


● *Radio Reception.* An operating battery-powered radio is an essential part of an effective shelter. Since radio reception is cut down by the shielding necessary to keep out radiation, as soon as the shelter is completed a radio reception check must be made. It will probably be necessary to install an outside antenna to receive CONELRAD broadcasts, which are much weaker than normal broadcasts.

Detailed specifications for any of the illustrated shelters except the reinforced concrete pipe shelter are published by the Office of Civil and Defense Mobilization in the booklet *The Family Fallout Shelter* (see page 40).



ABOVE GROUND DOUBLE WALL SHELTER



BASEMENT CONCRETE BLOCK SHELTER

Aboveground Double-Wall Shelter

No blast protection. Reduction of radiation to 1/1000 of outside levels. Materials cost for family of 6: \$700. Good for areas where water or rock is close to the surface and an underground shelter is therefore impractical.

Basement Concrete Block Shelter

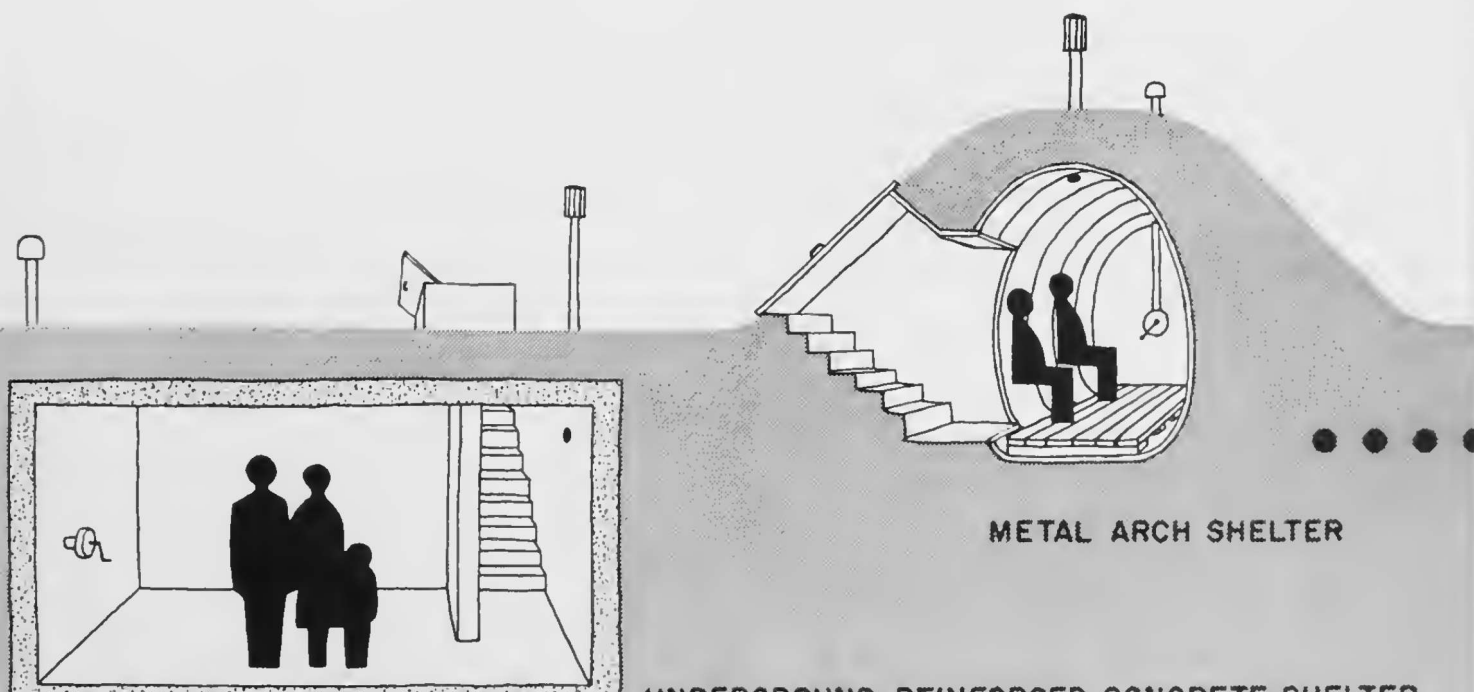
No blast protection. Reduction of radiation to 1/200 of outside levels. Materials cost for family of 6: \$200 (but requires a basement). Easy to construct by yourself. Hazardous if house catches fire, so should not be built within 5 miles of Moffett Field.

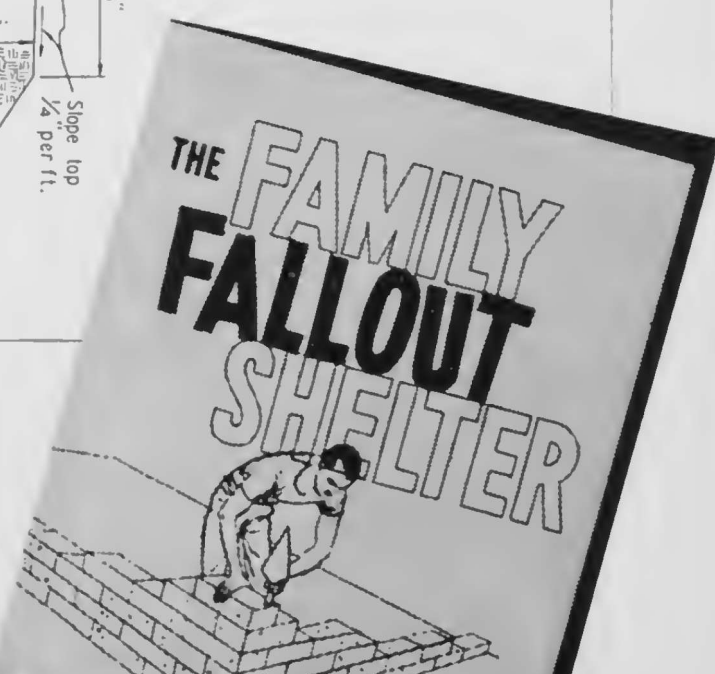
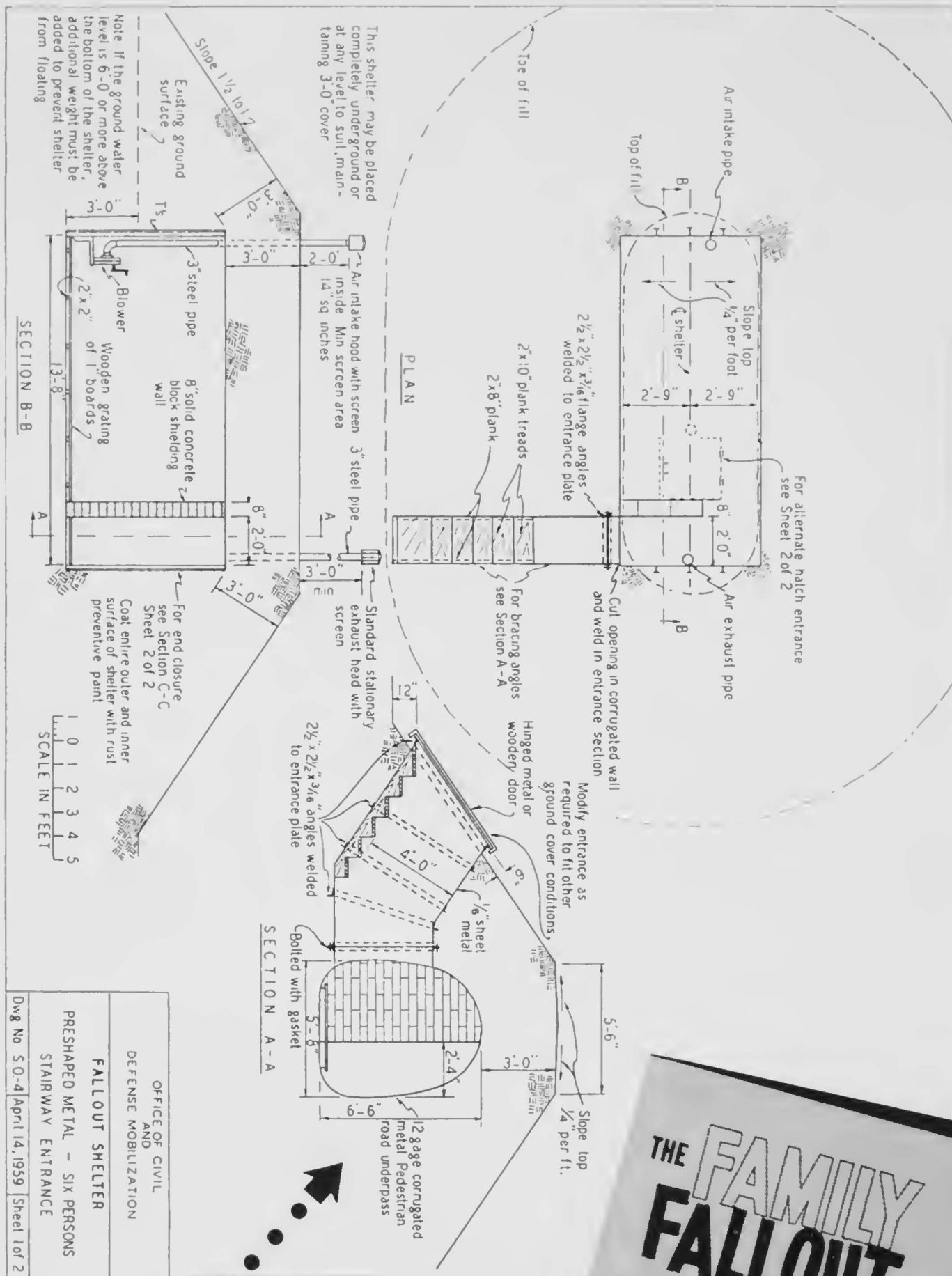
Underground Reinforced Concrete Shelter

Possibly some blast protection (not yet tested). Reduction of radiation to 1/5000 of outside levels. Materials cost for family of 6: \$500, if built as an addition to the basement of a home under construction; otherwise, \$1,000-\$1,500, depending on the type of entrance used.

Preshaped Metal Arch Shelter

Blast protection of 30 p.s.i. (verified by Nevada test). Offers 90% assurance of survival beyond 1½ miles from ground zero under 5-megaton bombing. Reduction of radiation to 1/500 of outside levels. Materials cost for family of 6: \$700.





OFFICE OF CIVIL AND DEFENSE MOBILIZATION	
FALLOUT SHELTER	
PRESHAPED METAL - SIX PERSONS STAIRWAY ENTRANCE	
Dwg No	S.O.-4
April 14, 1959	
Sheet 1 of 2	

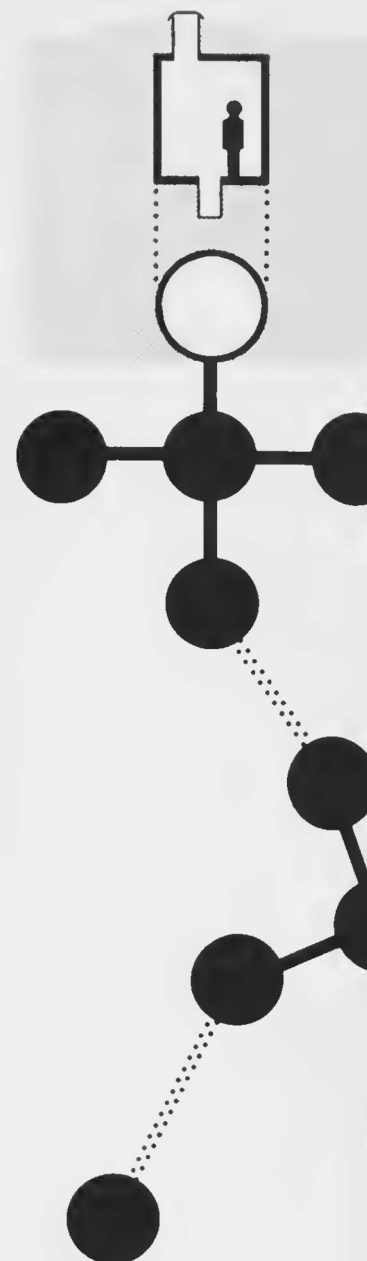
"The Family Fallout Shelter," published in June, 1959,
by the Office of Civil and Defense Mobilization, Washington, D. C.

Reinforced Concrete Pipe Shelter

The reinforced concrete pipe shelter is described in detail here because it is low-cost, virtually prefabricated, and effective against blast, fire, and fallout. The shelter uses raw materials that are readily available throughout the United States and it is suitable for nearly every condition of soil and ground water.

This shelter may be either constructed as a single unit or combined into multiple units. Materials, costs, and instructions outlined here are for a single unit. However, a group of units constructed cooperatively to serve a block of families would make it easier to re-establish community activity and would permit a number of savings through the sharing of emergency equipment among shelters. A larger community unit could also be built by connecting a series of block units. Here, the block units should be constructed separately and not joined into community units until after attack, so that the destruction of one block unit would not carry the blast wave into the other units and destroy an entire chain of shelters. Postattack, the sheltered persons could connect block units by breaking out an exit membrane and tunneling to the adjoining block unit. Community units would be advisable for control and psychological purposes, but it is doubtful that they would offer any economies beyond those possible with block units.

MATERIALS COST FOR SINGLE UNIT (6 people max.)	Max. Cost	Min. Cost*
Class III tongue-and-groove centrifugal reinforced concrete pipe, 8 ft. @ \$46/ft.....	\$368.00	\$204.00
Concrete for floor and ceiling (including ½" reinforcing bars 6" on center), 8' diameter x 12" @ \$25/ yd. of concrete in place.....	95.00	47.00
Corrugated steel culvert, 2' diameter x 4', for entrance	5.00	5.00
Dished pressure vessel head, with 4 ft. endlark of ¾" coil chain welded to inside of head, for door.....	90.00	90.00
Ladder	20.00	20.00
Corrugated steel culvert, 2' diameter x 4', for storage of supplies.....	5.00	5.00
TOTAL	\$583.00**	\$371.00**

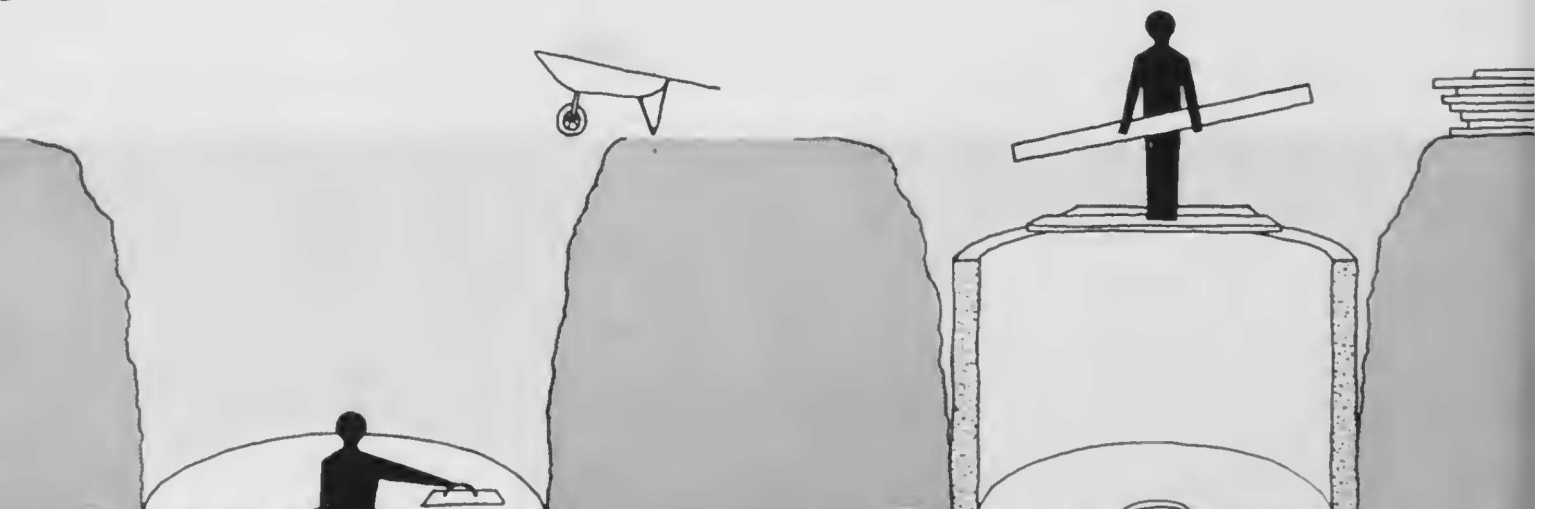
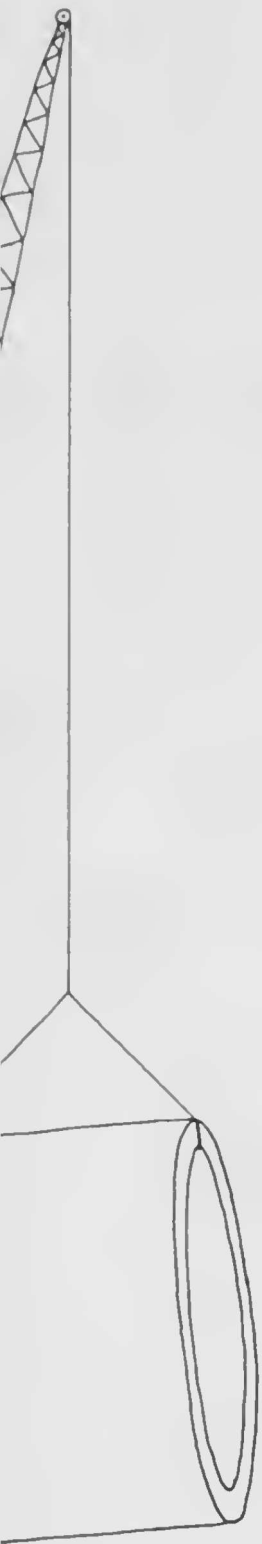


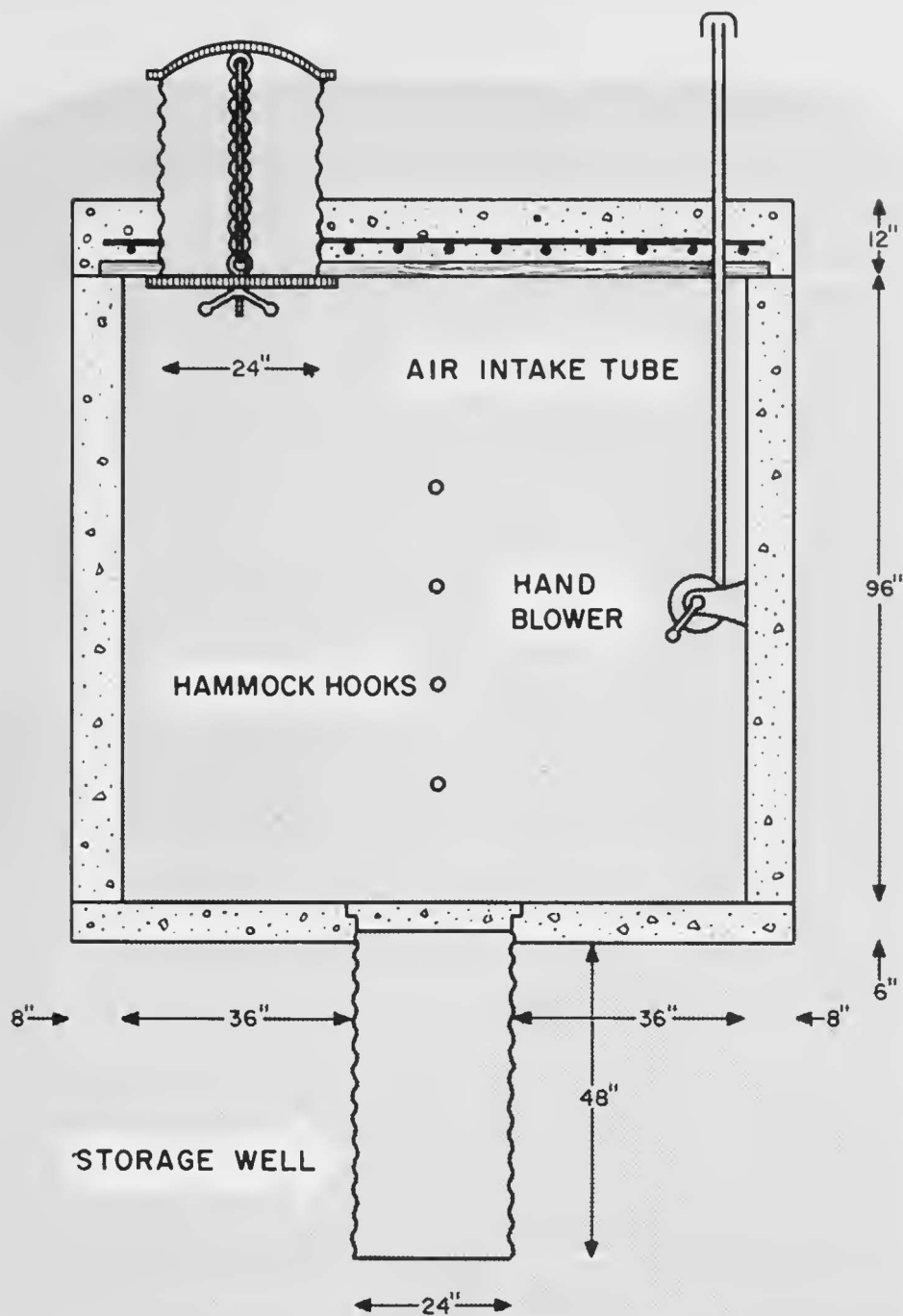
(Continued)

*Savings can be made by (1) using Class D pipe (rejected because of chips

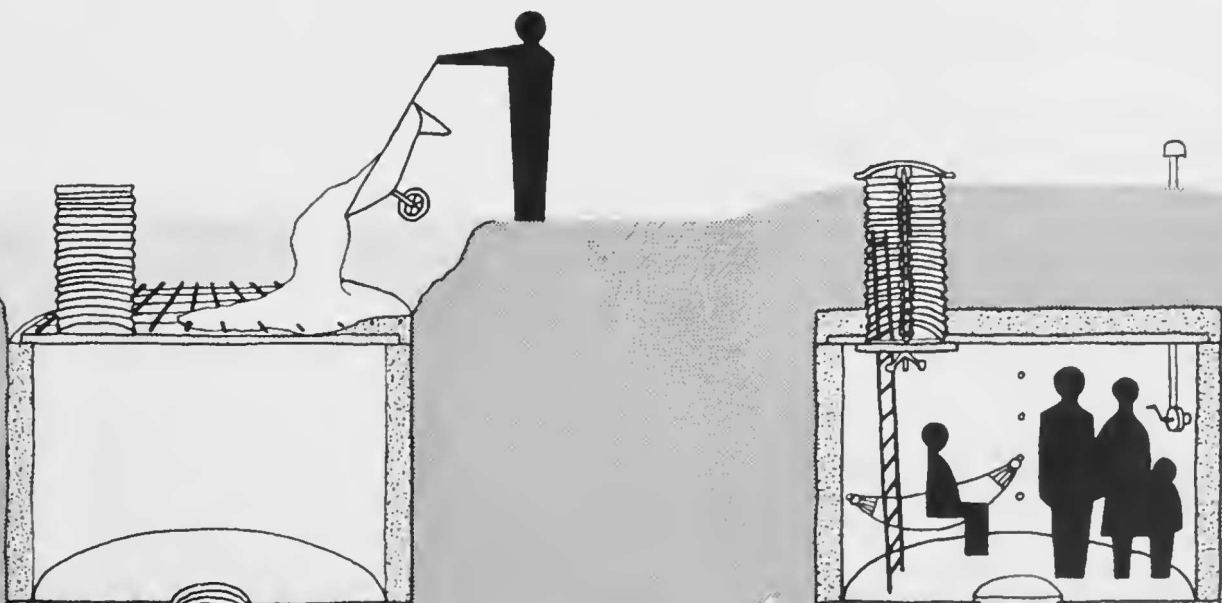
Method of Construction

- 1 a. Dig hole 9 ft. in diameter and 9 ft. deep, for the shelter pipe.
b. In that hole, dig another hole 2 ft. in diameter and 4 ft. deep for the storage pipe.
- 2 a. Place storage pipe in the smaller hole so that top of storage pipe is flush with finished floor.
b. Pour concrete floor, if you are using one, as footing for shelter pipe. Place a tar rope seal on pipe seating.
c. Have 8 ft. section of 8 ft. diameter concrete pipe delivered in the larger hole.
d. Fill in gap around outside of shelter pipe with dirt.
e. Cut 2"x4"s or 2"x6"s in appropriate lengths and place across the top of the shelter pipe.
- 3 a. Place corrugated entrance pipe in position resting on 2"x4"s.
b. Support $\frac{1}{2}$ in. reinforcing rods 6 in. on center 2 in. above 2"x4"s, and wire at each crossing. Pour 6 in. slab roof of concrete over 2"x4"s.
- 4 a. Cut hole in 2"x4"s at bottom of entrance pipe to make shelter entrance.
b. Place sheet of vinyl plastic over slab as water seal.
c. Cover roof with dirt, carefully grading away from shelter to avoid a drainage problem.
d. Furnish as desired.

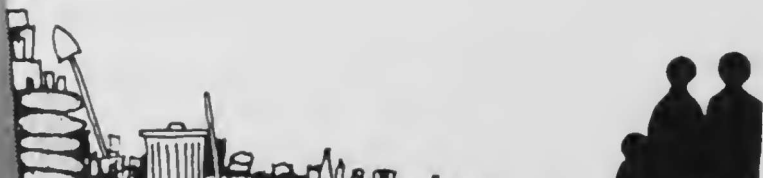




.... Blast protection of 100 p.s.i. (verified by Nevada test). Offers 90% assurance of survival beyond 1 mile from ground zero under 5-megaton bombing. Reduction of radiation to 1/5000 of outside levels.



VI SURVIVAL HANDBOOK



- ① emergency shelter
- ② supplies
- ③ food
- ④ decontamination
- ⑤ sanitation
- ⑥ first aid

The six parts of this section make up a valuable handbook which should make it possible for you to live through a nuclear attack if you are prepared in advance and if you survive the initial blast or radiation.

The first section is for those persons who are unable to get into permanent shelter of some sort. The last five sections supplement the home shelter and evacuation plans, but would be useful for all survivors.

① emergency shelter

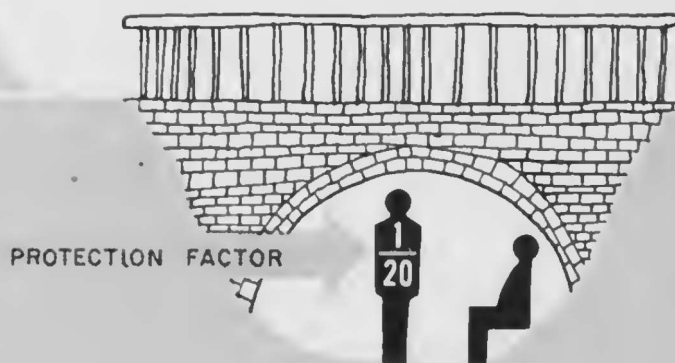
This section could make a difference between life and death if you were caught too far from home or SRI to put your survival plan into effect after an attack. Under such circumstances you must know what sort of protection to seek if you are going to avoid excessive radiation exposure.

In general, you will need to be behind a cover with a mass and weight equivalent to at least 3 feet of earth (see page 00) to have sufficient protection from radiation levels expected in this area after an attack.

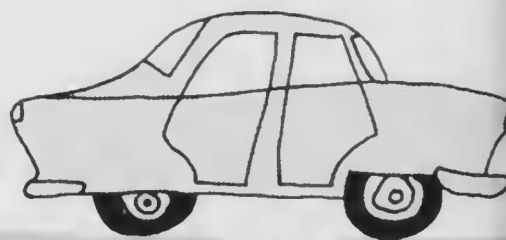
Caves, culverts, and sandbagging over some such frame as a table are possible expedients. More than likely, however, your most accessible and effective shelter would be in the basement of a



CAVE



CULVERT

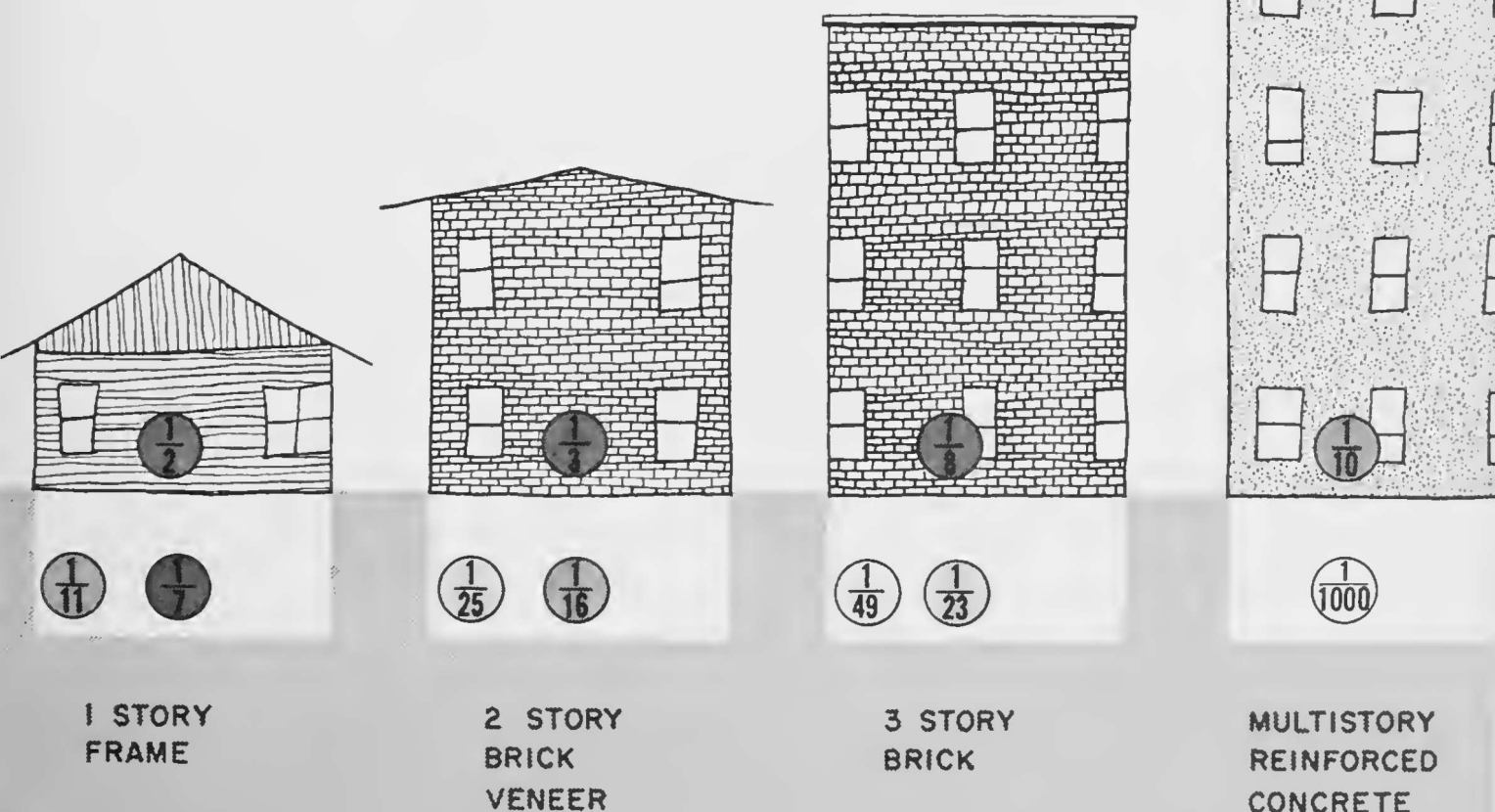


CAR
OVER
HOLE

nearby building. You should be guided by the numbers on the accompanying illustration which indicate how much fallout radiation from the ground and rooftops would be reduced. Note that reinforced concrete offers better protection than brick, and brick, better protection than wood. Above ground, greater protection is offered by mid-elevations of high buildings (because they are surrounded by greater numbers of floors) and by areas away from windows. In basements, which provide the best protection of all, corners are better shielded from surface radiation than are central positions; and of course the greater the number of floors above the basement, the greater the protection.

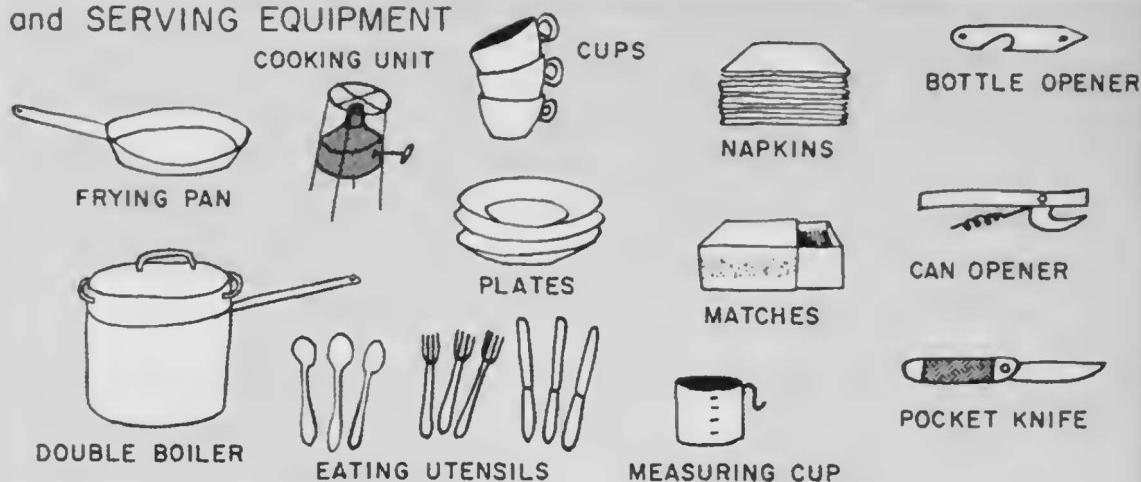
It should be understood, however, that in general the lower degrees of protection are not sufficient shielding. For example, here on the Peninsula where the radiation accumulated over a two-week period could easily exceed 6,000 R, a reduction to 1/10 would still permit a fatal dose of 600 R, and a reduction even to 1/60 would permit a sickness dose of 100 R.

You should stay under temporary shelter for 2 weeks unless you are advised otherwise over your radio.



② supplies

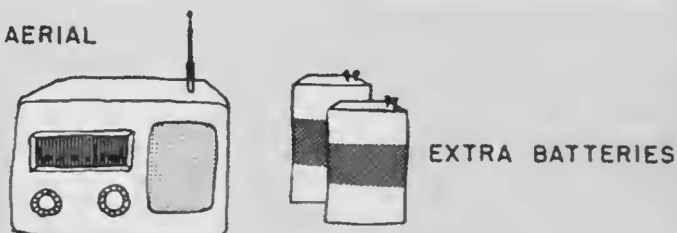
COOKING and SERVING EQUIPMENT



CLOTHING and BEDDING



BATTERY-POWERED RADIO WITH AERIAL



SANITATION SUPPLIES



FOOD and WATER SEE PART 3: **food**



DEHYDRATED MILK



BOTTLES & NIPPLES



DISPOSABLE
DIAPERS



EXTRA
WATER

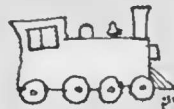
INFANT CARE SUPPLIES



BIBLE



BOOKS



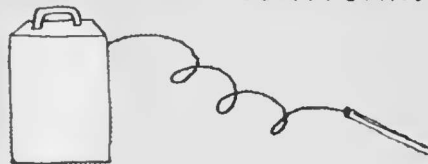
TOYS



GAMES

RECREATIONAL and SPIRITUAL SUPPLIES

★ MONITORING INSTRUMENT



CANDLES



HAMMER



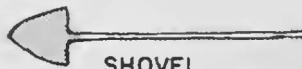
PLIERS



WRENCH



BUCKET



SHOVEL



BROOM



SCREWDRIVER



AXE



CROWBAR

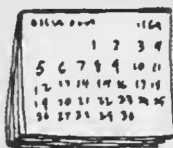
TOOLS and MISC. ITEMS



BATTERIES



FLASHLIGHT



CALENDAR

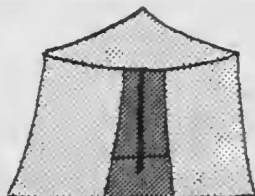


CLOCK

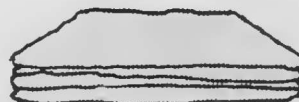
EVACUATION SUPPLIES



GASOLINE



TENT



GROUND COVER

SEE PART 6: **first aid** MEDICAL SUPPLIES

★ A Citizens Instrument Kit for monitoring radiation may be ordered from Bendix Aviation Corporation, Cincinnati, Ohio, for \$20.

③ food

Each family should keep at least a two-week supply of food and water on hand. For those planning to use a home shelter, one solution to this problem is to keep on hand a somewhat larger stock of the foods used daily by the family. This plan has the advantage of automatic rotation of stocks and possible easy reduction of the investment in food at any desired time with no financial loss. However, it requires precious time for the packing of stocks in the family car and would not be suitable if evacuation or use of the SRI shelter is planned.

A second solution to the problem is to set up a special emergency stock, packed and ready to move. Depending on your plans, this stock could be kept in the home, in the family shelter, in the family car, or in the SRI basement.

In designing a family food stockpile, the important factors are concentration (food value in relation to volume), food life, and ease of preparation. Of less importance are palatability and cost. A balanced ration is not critical, since the stockpile would be used for only a limited period of time. Select foods that require little space for storage, that keep for months without refrigeration, and that require little or no cooking.

Foods canned in metal or glass will stay in good condition for six or more months if kept in a dry cool place—preferably not above 70° F or below freezing—protected from sun and dust. Replace canned foods with a fresh supply at least once a year and foods in paper boxes without added protection at least every three months.

If required, include special milk or strained, chopped, or other special foods for infants, toddlers, older persons, diabetics, invalids, and others on a special diet.

Cans and jars to meet family needs for single meals are best for meat, poultry, fish, vegetables, fruit, evaporated milk, and other foods which deteriorate rapidly after the container is opened.

The following food list is provided to assist the SRI staff in establishing their own home shelter food stockpiles. If you plan to seek shelter in the SRI basement, you should choose items from the list for your comfort and taste since the SRI subsistence ration is adequate though not filling. The SRI ration is a multipurpose food designed originally to provide a balanced diet at low cost to starving peoples abroad. The ration provides the food values equivalent to a meal of beef, potatoes, peas, and milk. It was provided to SRI at cost, 3c per meal, by the Meals for Millions Foundation, but it is not commercially available to individuals.

If you plan to evacuate, you should stockpile concentrated foods. The quantities of foods shown on the following list are sufficient for one adult for two weeks. Teen-agers may need more food, and young children may need less, than the amounts recommended for one adult.

FOOD FOR HOME SHELTERS

The following foods are sufficient to provide an adult with 2,000 calories per day for two weeks. Other foods that are equivalent may be used, except fruits and vegetables.

FOOD ITEM	TOTAL WEIGHT	DAILY AMOUNT
<i>Milk</i> —Nonfat, dry.	20 oz.	$\frac{1}{3}$ cup
Evaporated.	14 oz.	1 oz. (2 tbsp.)
<i>Juices</i> —Tomato, grape, apple. In crown capped bottles only. Store upright.	64 oz.	$\frac{1}{2}$ cup
<i>Fruits</i> —Apple sauce, pears, peaches. In glass jars with glass lids only. Store upright.	112 oz.	1 cup
<i>Vegetables</i> —Corn, peas, beans, spinach.	112 oz.	1 cup
<i>Soups</i> —Canned or dehydrated (in can). Other than tomato.	112 oz.	1 cup
<i>One-dish meals</i> —Canned goods including chicken and rice or noodles, pork and beans (without tomato sauce), baked kidney beans, chile con carne, and beef stew.	208 oz.	2 cups
<i>Spreads</i> —Jam, jelly, marmalade. In glass jars.	14 oz.	1 tbsp.
<i>Crackers</i> —In glass or cans.	56 oz.	25-30 crackers
<i>Beverages</i> —Instant coffee or tea.	4 oz.	3 tsp.
Instant cocoa.	4 oz.	3 tsp.
<i>Sugar</i>	4 oz.	2 tsp.
<i>Hard Candies</i>	16 oz.	1 oz.
<i>Salt</i>	4 oz.	
<i>Water</i> —Stored in a dark place in clean containers with tight-fitting lids. Rinse and refill containers every 3 months for palatability.	7 gals.	2 qts.

Sterno

7 cans per family

④ decontamination

General Precautions

The first point to remember is that fallout gives off dangerous gamma rays which can penetrate the air and solid materials for considerable distances. These rays can be best avoided by taking shelter wherever the best shielding is available. But in addition, the spread of the material into shelter areas should be prevented by common-sense actions such as closing doors, windows, and chimney flues, and sealing them with tape, newspapers, rags, etc., wherever possible. It is also important to refrain from movement in and out of shelter areas after fallout has been observed, since it is as easy to track in fallout as it is to track in mud or dust. Fallout material tracked into shelters can increase the radiation exposure of the occupants.

The second point to remember is that physical contact with fallout material poses an additional hazard. Not only is gamma radiation more intense from material attached to the body, but the short-range beta particles which are also given off can severely burn the skin or internal organs, if swallowed. This means that the clothing and skin must be thoroughly cleansed of all contaminated particles as soon as safe shelter is found, and that contaminated food and water must not be swallowed. Gas masks or air filters are not normally necessary because the filtering action of the nostrils will prevent most radioactive particles from reaching the lungs.

Fallout is not the invisible hovering cloud which is commonly imagined. Unlike poison gas, it is not a substance that only a specially equipped crew can combat. On the contrary, in dangerous levels, fallout is deposited in a visible layer of dust, ashes, or mud on exposed surfaces or in a watery solution with rain or mist. As long as certain precautions are observed, it can be avoided or removed by fairly simple methods.

A third point concerns the exposure received during post-attack decontamination. Even though outside decontamination will reduce the exposure of shelter occupants, the exposure of people who must actually do the work will be temporarily increased. The decontamination dosage must be held to safe levels by delaying emergence from shelter for as long as possible, by cleaning the most important outside areas first, and by using the most rapid and effective decontamination techniques.

The importance of delay can be seen from the fact that fallout radiation is only 1/100 as intense after two days as it is at one hour after the attack, and only 1/1000 as intense after two weeks. The increase in protection gained from remaining in a shelter during this period is well worth the inconvenience and monotony that must be endured.

The importance of using the right techniques can be seen from calculations which indicate that hosing off the roof is almost 100 times more effective than spading up the back lawn. If you don't know the right techniques, don't decontaminate.

Personal Decontamination

The most likely means of body contamination is by fallout settling on the skin. Any clothing that prevents this provides some protection from skin burns. There is no special clothing recommended for protection against fallout; waterproof garments may be of some value but they are not essential. The important thing is to have a change of clothes—outer clothing should be removed after contact with fallout to rid yourself of most of the contamination you have picked up.

Thorough washing will remove radioactive particles from clothing and your person. However, the particles will then be in the water, which should be emptied away from places where people gather. Don't dump it near any source of drinking water. You should pay particular attention to bathing areas of the skin most likely to collect particles: the neck and other areas under the edge of the clothing, hair, ears, and nose, between the fingers, under fingernails,



skinfolts, and skin surfaces covered by perspiration. If you cannot wash your exposed clothing, store it in a suitable place away from your shelter.

A second means of bodily contamination is by ingestion—that is, by breathing, eating, or drinking fallout material. Ingestion of most airborne fallout in breathing is prevented by natural body defenses, but a small fraction may lodge in the lungs. Most of this fraction is eventually excreted from the body, so the danger from inhaling fallout is ordinarily much less than the danger from surrounding radiation outside the body. In extremely dusty air, however, handkerchief masks or other protection will help.

It is not likely that food and water inside a building would be contaminated enough to be harmful for eating or drinking. Food or water in a closed refrigerator, container, or package will be all right as long as the cover is intact. Even exposed foods such as raw carrots, potatoes, and onions may be eaten if they are peeled first. Of course, it is only sensible to wash the surfaces of food containers, exposed foods, and utensils before using them.

The purity of tap water may be questionable unless it is known to have been in a covered or deep reservoir, pipes, water heater, toilet tank, or other secure source before fallout arrives. When warning is available, such sources should be filled with a supply of water. A common ion-exchange water softener is very effective in removing fallout material from incoming water. Unfortunately, boiling, purification tablets, and most other means of purifying water have no effect on radioactivity.

Shelter Decontamination

A vacuum cleaner is an effective way to remove radioactive dust from inside walls and floors, fixtures, clothing, and bedding. However, the contamination will then be concentrated in the dust receptacle. Disposable receptacles should be removed and buried; if the receptacle is not disposable, it should be carefully emptied outdoors and stored in a remote location while not in use. If a vacuum cleaner or electric power is not available, whisk brooms, brushes,



and dust pans may be used to remove heavy layers of radioactive dust, if care is taken not to stir dust into the air; a damp dusting cloth may be used for light dust, if care is taken to avoid skin contamination. Water and cleaning solutions are poor agents for removing inside contaminants, since they tend to make the contaminants cake and soak into porous materials.

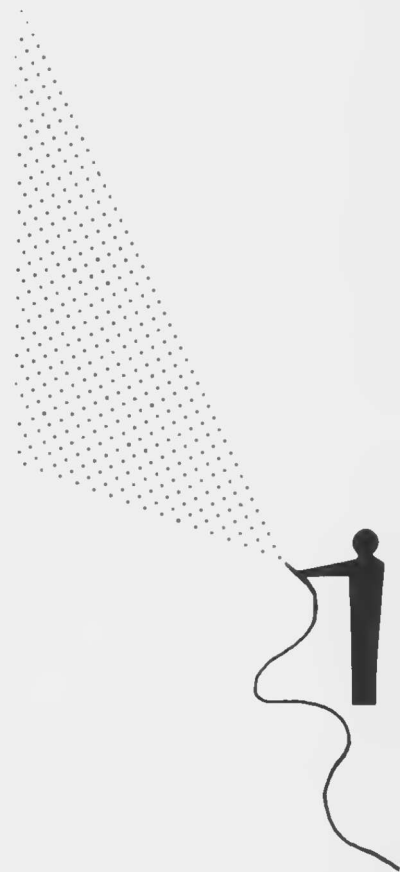
The surest way to avoid shelter contamination is to keep fallout material outside; seal outside openings and keep all contaminated articles such as outer clothing, shoes, and cleaning articles in a covered area outside of the immediate shelter space.

Outside Decontamination

Ideally, you should wait before going outside your shelter until radiation monitors have declared that your area is safe. Otherwise you will be subjected to heavy radiation from airborne contamination as well as from material on the ground; besides, you will not be able to clean anything without having it quickly recontaminated.

When you can work outside, the most effective measure is to wash down roofs, walls, and paved areas with a hose, being careful always to work downward so as not to recontaminate cleared areas. You should work in a cleared area, projecting the stream as far away from you as possible in order to minimize contamination by spray and exposure to the surrounding uncleared areas. Where possible, contaminated water should be directed toward sewers, ditches, and drains. Hosing is likely to be of little use without adequate drainage, so trenches should be dug to carry off the water where there are no drains. Unpaved areas around roof eaves, drain spouts, and the edges of pavements can be spaded and turned over to bury the drained-off contaminants.

Movable objects, loose materials in gutters and corners, and the surfaces of loose dirt and trash piles can frequently be removed to more shielded areas. Dirt can be banked against the sides of houses to act as shielding if this has not already been done. Otherwise, it is not ordinarily desirable to attempt to clear unpaved areas in early periods—this should wait until the radiation has decayed to very



low levels because of the slow work rates (about 50 sq. ft. per man-hour) and consequent lengthy exposures.

If water is not available for outside decontamination, smooth areas such as concrete and tarpaper roofs can be swept clean in directions away from the occupied shelter. This should also be done about a week after the first hosing or sweeping in order to remove contaminants that have resettled on the surface. Such material is particularly likely to resettle in corners and cracks.

About half of the radiation which reaches you from a smooth ground surface comes from within a radius of 35 ft., and very little radiation reaches you from surfaces that are out of sight due to an obstruction of some density. Relatively little activity adheres to vertical surfaces such as walls or to covered areas such as interiors of porches, unless the surfaces are moist. It is therefore much better to concentrate on roof and nearby ground surfaces than to decontaminate surfaces which are fairly distant or behind embankments or other buildings, or surfaces which are unlikely to pick up much radioactivity.

RADIATION CONTRIBUTED TO EXPOSURE AT CENTER OF TYPICAL SHELTERS FROM VARIOUS SURFACES

TYPE OF SURFACE	AVERAGE HOUSE		LARGE OFFICE BUILDING		WAREHOUSE OR FACTORY	
	FIRST FLOOR	BASEMENT SHELTER	FIRST FLOOR	BASEMENT SHELTER	FIRST FLOOR	BASEMENT SHELTER
Roof	30%	60%	25%	40%	60%	80%
Lawns, gardens, and other unpaved areas	30%	15%	30%	24%	14%	5%
Sidewalks, driveways, and other paved areas	20%	10%	25%	20%	10%	3%
Streets	12%	6%	10%	8%	5%	2%
Outside building walls	4%	7%	10%	8%	10%	10%
Trees, poles, fences, and other obstructions	4%	2%	—	—	1%	—
TOTAL	100%	100%	100%	100%	100%	100%

Since in practice you would probably not be able to measure accurately the effectiveness of your decontamination activities, you can not judge exactly how much time to spend on each task. The best policy in this case is to follow the procedures mentioned above and limit your working time so as not to receive too high radiation doses during decontamination. If you are part of a small group in an ordinary shelter such as a home, large building, or basement, not more than about one hour per day, starting at the time of emergence from shelter, should be spent in the first stages of decontamination. After this schedule has been continued for about a week, the work period may be increased to about two hours per day unless more specific civil defense instructions are received. Really thorough decontamination should be left until the area can be surveyed by a radiation instrument, or until an organized crew can do the job.

Trained and equipped decontamination crews can use measures that are up to ten times as efficient as those of the average householder. These measures include fire hosing, street flushing, sweeping, plowing, scraping, and grading. Unfortunately, a small trained crew would be severely limited in the amount of area they could cover within a reasonable period after attack. If it took them two weeks to reach an area, over half of the radiation damage would have been received. The need for protection against the most intense early radiation is the reason that simple and timely decontamination measures should be understood by everyone.

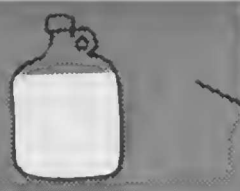

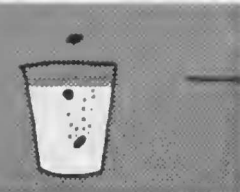
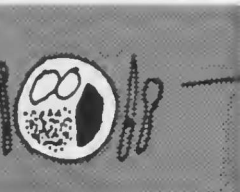

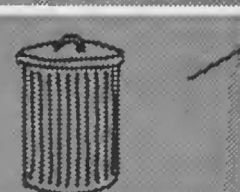

Summary Instructions

- ① Avoid bodily contamination by radioactive particles.
- ② Keep the fallout out of your shelter area.
- ③ Stay in your shelter as long as possible; then decontaminate rapidly and efficiently.

5 sanitation

Sanitation consists of eating clean foods, drinking pure water, and disposing of wastes. Here is what you can do about emergency sanitation.

General Precautions

-  1 Drink only water or other liquids that you *know* are safe. Store right now the extra drinking water that your family might need. Don't wait for an emergency.
-  2 Know where to get water for emergency drinking, cooking, and washing if your outside supply fails.
-  3 Be prepared to purify water for drinking purposes in your own home, if necessary. (See *How To Purify Your Drinking Water*, below.)
-  4 Eat only safe foods prepared under safe conditions. Keep a two-week supply on hand, and replace periodically to keep your stock in good condition.
-  5 If the emergency lasts for several days and if there is no danger from radioactive fallout, bury your garbage.
-  6 Provide for the disposal of human wastes in covered containers when flush toilets are inaccessible or not working. Never expose human wastes to disease-carrying insects or animals. That's how epidemics start. (See *Sewage Disposal*, below.)
-  7 Be ready to take care of frozen foods and refrigerated food supplies if the gas and electricity are shut off. Eat or cook such foods before they spoil. Don't refreeze any frozen foods that have completely thawed without cooking them first. If the food still contains some ice crystals, it may safely be refrozen, even though the quality may suffer.

How to Purify Your Drinking Water

If you do not have enough stored water on hand in your home following a disaster, you will need to know where to get more from outside. You will also want to know how to treat the water to make it safe. Tapwater will be safe at first, but after several days it will be contaminated if it comes from an open reservoir. If the system is still working, you will be notified when it is safe to resume using water drawn from the tap. Follow the instructions of the authorities. In some cases, emergency water rations may be delivered to distribution points in your neighborhood or you may be instructed to use water drawn from taps or wells after you have taken certain steps to purify it.

Good methods of purifying water include the following:

● *Boiling:* Most water can be purified for drinking purposes by boiling it for 5 or 10 minutes to destroy the germs. If you wish to improve the taste of the water after boiling it, let it cool and then pour it from one container to another several times.

● *Chlorination:* Any household bleach solution that contains hypochlorite, a chlorine compound, may be used for water purification. Bleach solutions having 5.25% sodium hypochlorite by weight are the most commonly available. You can add the bleach solution to the water in any clean container in which it can be thoroughly mixed by stirring or shaking. The proper amounts to be used can be estimated from the accompanying table.

After adding the proper dosage and stirring, allow the water to stand for 30 minutes. After that length of time, it should have a distinct taste or smell of chlorine. If this taste or smell is not present, add another dose to the solution and let the water stand for another 15 minutes. The taste or smell of chlorine is a sign of safety. It is not harmful. If you cannot detect chlorine in water that you are trying to purify by this method, do not drink it. The solution may have become weak because of its age or for other reasons.

● *Iodization:* Purification tablets that release iodine into the water may be used safely. These tablets are not generally available in commercial retail stocks at present, but they may occasionally



AMOUNT OF WATER	DOSAGE OF 5.25% SOLUTION	
	FOR CLEAR WATER	FOR CLOUDY WATER

be found at drug and sporting-goods stores. Use tablets in accordance with instructions on the package. Usually one tablet is sufficient for one quart of water; the dosage is doubled for cloudy water.

Ordinary household iodine may be used to purify small quantities of water. Add 2 or 3 drops of tincture of iodine or iodine solution to each quart of clear water, 8 to 10 drops for cloudy water. Mix and allow to stand for 30 minutes.

Other methods of purification may be recommended by the proper authorities if special conditions arise. Follow the instructions of your local government officials.

Sewage Disposal

Water flush toilets cannot be used, of course, when water service is interrupted. The water remaining in the fixture is not sufficient to flush the wastes down the sewer. Clogging may result, and your living conditions would then become more uncomfortable.

Even if water is available, local authorities may ask you not to use flush toilets, wash basins, and other fixtures connected with soil pipes. The sewer mains may be broken or clogged, making it impossible to carry off wastes. Water may be needed for fire fighting.

Failure to dispose of human wastes properly can lead to epidemics of diseases such as typhoid, dysentery and diarrhea. Sewage must be disposed of in ways that will prevent contamination of water supplies used for drinking, cooking, bathing, laundering, and other domestic purposes. Good emergency methods of human waste disposal include the following:



- *Covered Metal Containers.* Almost any covered enamel or galvanized metal container such as a garbage pail will serve for a temporary toilet. This small vessel may be emptied into a larger, tightly covered, waterproof container such as a 10-gallon garbage can until the public sewage system can be put back into action or other arrangements can be made. A small amount of household disinfectant should be added after each emptying, and deodorants and insecticides should be used to control odors and insect breeding in containers that cannot be emptied immediately.

● *Burial.* If you have unpaved yard areas nearby, bury human waste matter under 12-24 in. of earth when you can safely emerge from shelter. Never deposit wastes, liquid or solid, on the surface of the ground—insects and rodents may carry infections to other humans.

● *Privies.* Where radioactive fallout does not present a hazard, a temporary pit privy may be constructed in a yard area for use by several families. The pit should be made flyproof by means of a tight-fitting riser, seat, and cover. A low mound of earth should be tamped around the base of the privy to divert surface drainage and help keep the pit dry. A small amount of powdered lime should be added after each use. Accumulated waste should be covered with not less than 12 in. of earth when privy is moved or abandoned. Outdoor toilets should not be located in areas that are subject to flooding and should be built at least 50 ft. from any well, spring, or other source of water supply. Otherwise, the wastes may contaminate water or be washed out onto ground surface where they would be exposed to disease-carrying flies and rodents.

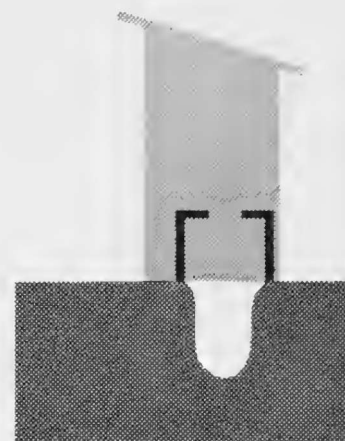
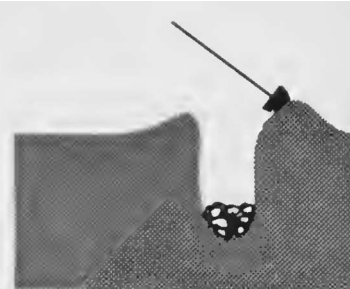
Garbage and Rubbish Disposal

Garbage, as opposed to rubbish, may sour or decompose and must be carefully handled if odor and insect nuisances are to be avoided. It should be kept separate from rubbish, which is fairly easy to dispose of.

Garbage should be drained and wrapped in several thicknesses of old newspaper, then put into a tightly covered container. If possible, keep a 20-gallon garbage can on hand for emergency use pending restoration of local collection service.

For final disposal if collection service is not reinstated, all stored garbage should be buried under 12-24 in. of earth to discourage breeding of insects and to keep animals from digging it up. Do not dump garbage on the ground—this attracts rats and other scavengers.

Rubbish may be burned in open yard areas or left at dumps established by local authorities. Cans should be flattened to reduce their bulk. Do not deposit ashes or rubbish in streets or alleyways without permission—such material may interfere with fire fighting and other emergency operations.




6 first aid

In a war emergency, trained medical personnel will be in great demand. Be prepared for self-sufficiency in emergency health treatment.

GENERAL INSTRUCTIONS

For use only if an injured person is in danger of losing his life through bleeding, suffocation, severe burn, or shock, and if a doctor or trained first-aider is unavailable.

- 
- 1 Keep the patient lying down, head level with the rest of the body. *But*, if the patient has a *head injury*, raise the head slightly.
 - 2 Keep the patient reassured, warm, covered, and comfortable. Do not let him see his wounds.
 - 3 Do not give an unconscious or semi-conscious person anything to drink.
 - 4 *Do not move an injured person* except to protect him from further danger to his life (e.g., fire, flood, smoke, fallout, etc.). If you *must* move the patient, *keep him lying down flat*, and use a wide board such as an ironing board or door, with the patient tied to it so that he won't roll off, or if you have no such board available, *kneel* with two other people on the same side of the casualty, *slide* your hands under him gently, and *lift* carefully, keeping the patient's body level. Walk in step to prevent jarring, and carry the patient only far enough to be out of danger.

For Bleeding

- 1 Apply pressure over the wound until bleeding has been controlled. If bleeding continues, apply additional pressure to the artery which leads to the wound.
- 2 Then apply layers of cloth to the wound and bandage firmly. Do not remove the dressing.
- 3 If an arm or leg is wounded, elevate it with pillows.
- 4 Do not use a tourniquet except as a last resort. If you do, however, leave it on for a doctor to remove, being careful to release it one minute in every twenty.



For Broken Bones

- 1 If possible, do not move the patient; simply apply an ice bag to the injured area to relieve pain.
- 2 If you must move a patient with a *broken limb*:
 - a. Use a board, thick bundle of newspapers, or even a pillow to splint the broken bone so the broken ends cannot move.
 - b. Use layers of cloth or newspapers to pad a hard splint.
 - c. Tie the splint firmly in place above and below the break but not tightly enough to cut off circulation.
 - d. Broken hand, arm, or shoulder bones should be supported after splinting. Tie a sling (preferably made from a triangular bandage) around the patient's neck, or place the patient's forearm across his chest and pin his sleeve to his coat or shirt.
- 3 If you must move a patient with a *broken neck or back*, slide him gently onto a litter or wide, rigid board; then leave him alone until trained help arrives.



For Burns



- ① Do not remove clothing covering the burn.
- ② If the burn is not covered, cover the burned area with a clean dry dressing or several layers of cloth folded into a pad.
- ③ Apply a bandage over the pad, tightly enough to keep out the air. Do not remove the pad.
- ④ *Do not use grease, oil, or any ointment except on a doctor's order.*
- ⑤ On *chemical burns* (e.g., from acid or lye), wash the burn thoroughly with water before covering with a dry dressing.

For Shock

Shock is often recognizable by paleness, cold and moist skin, rapid pulse, sweating, or unconsciousness. *Do not move the patient* except to elevate the feet. Keep him warm, comfortable, and calm.



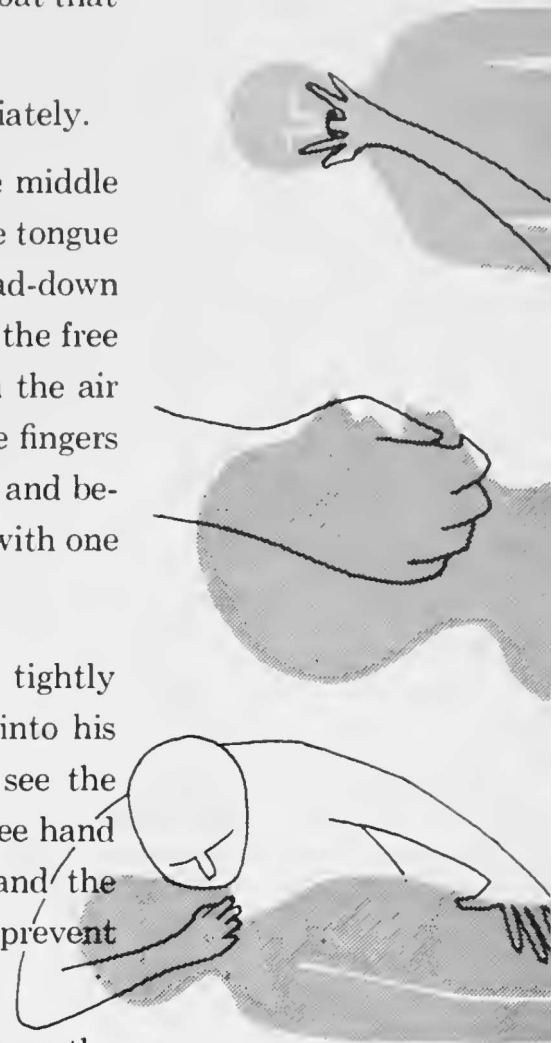
For Suffocation

Suffocation can result from pressure on the neck or chest, contact with a live electric wire, drowning, or breathing in foreign substances such as liquids, smoke, or gas. The usual signs of suffocation are coughing and sputtering or other difficulty in breathing. The face may turn purple and lips and fingernails become blue. Unconsciousness will follow quickly unless you act at once.

- ① Remove the person from the cause of suffocation. *If he is in contact with a live wire, do not touch him. Shut off the current if you can. If not, stand on a piece of dry wood or paper and remove the wire from the person with a long dry stick or other nonmetallic object. If the patient is in a room filled with gas, smoke, or water, get him out quickly.*



- 2 Remove any objects from the patient's mouth or throat that may obstruct breathing.
- 3 Apply mouth-to-mouth artificial respiration immediately.
 - a. Clear the mouth of any foreign matter with the middle finger of one hand. With the same finger, push the tongue forward. Place the patient in a face-down, head-down position and thump him firmly on the back with the free hand to help him dislodge any foreign object in the air passage. Turn him on his back and use the middle fingers of both hands to lift the lower jaw from beneath and behind so it juts out. Hold the jaw in this position with one hand.
 - b. Place your mouth over the patient's mouth, tightly enough for a relatively leakproof seal. Breathe into his mouth with a smooth steady action until you see the chest rise. As you start this action, move your free hand to the patient's abdomen, between the navel and the ribs, and apply continuous moderate pressure to prevent the stomach from filling with air.
 - c. When his lungs are inflated, remove your mouth from the patient's mouth, and allow his lungs to empty. Repeat this cycle, keeping one hand beneath his jaw and the other pressing on his stomach.
 - d. For a child or infant, continue at the rate of about 20 cycles per minute; for an adult, about 12 cycles per minute. After every 20 cycles, you should rest long enough to take one deep breath.
 - e. If at any time you feel resistance to breathing into the patient and his chest does not rise, stop and check his mouth for obstacles and pat his back firmly. Then quickly resume mouth-to-mouth breathing.



EMERGENCY FIRST AID SUPPLIES

(for a family of four persons)

FOR THESE PURPOSES	USE THESE	OR THESE	SUGGESTED QUANTITY
For open wounds, scratches, and cuts. Not for burns.	Antiseptic solution: Benzalkonium Chloride Solution, U.S.P. 1 to 1,000 parts of water.	Soap and water.	3- to 6-oz. bottle.
For a sling; as a cover; for a dressing.	Triangular bandage, folded, 37" x 37" x 52", with 2 safety pins.	Muslin or other strong material. Cut to exact dimensions. Fold and wrap each bandage and 2 safety pins separately in paper.	4 bandages.
For faintness.	Aromatic spirits of ammonia. Adult dose 1/2 tsp. in cup of water; children, 5-10 drops in 1/2 glass water. As smelling salts, remove stopper, hold bottle under nose.	None.	1- to 2-oz. bottle.
For open wounds or for dry dressings for burns.	Two medium first aid dressings, folded, sterile, with gauze-enclosed cotton pads, 8" x 7 1/2". Packaged with muslin bandage and 4 safety pins. Two small first aid dressings, folded, sterile, with gauze-enclosed cotton pads and gauze bandage 4" x 7".	a. Two emergency dressings 8" x 7 1/2", in glassine bags, sterilized. One roller bandage 2" x 10 yds. b. Four large sanitary napkins, wrapped separately and sterilized. One roller bandage 2" x 10 yds. Twelve sterile gauze pads in individual packages 3" x 3". One roller bandage 1" x 10 yds.	As indicated.
For bandages or dressings.	Large bath towels. Small bath towels. Bed sheet. Old soft towels and sheets are best. Cut in sizes necessary to cover wounds. Towels are burn dressings. Place over burns and fasten with triangular bandage or strips of sheet. Towels and sheets should be laundered, ironed and packaged in heavy paper. Relaunder every 3 mos.	None. None. None.	2. 2. 1.

EMERGENCY FIRST AID SUPPLIES (Continued)

FOR THESE PURPOSES	USE THESE	OR THESE	SUGGESTED QUANTITY
For eyes irritated by dust, smoke, or fumes.	Eye drops: castor oil. Use 2 drops in each eye. Apply cold compresses every 20 minutes if possible.	Bland eye drops sold by druggists under various trade names.	1/2- to 1-oz. bottle with dropper.
For splinting broken fingers or other small bones and for stirring solutions.	Twelve tongue blades, wooden.	Shingles, pieces of orange crate or other light wood, cut to approximately 1 1/2" x 6".	As indicated.
For splinting broken arms or legs.	Twelve splints, plastic or wooden, 1/8" to 1/4" thick, 3 1/2" wide by 12"-15" long.	A 40-page newspaper folded to dimensions, pieces of orange crate sidings, or shingles cut to size.	As indicated.
For purifying water when it cannot be boiled. (Radioactive contamination cannot be neutralized or removed by boiling or by disinfectants.)	Water purification tablets (iodine). Trade names: Globaline, Bursoline.	a. Tincture of iodine or iodine solution: 3 drops per qt. b. Household bleach solution (approx. 5% available chlorine): 3 drops per qt.	Bottle of 50 or 100.
For administering stimulants and liquids.	Paper drinking cups.	Envelope or cardboard type.	25 to 50.
To ease tension arising from the strain and monotony of shelter life.	Tranquilizers.	None.	Bottle of 100.
For holding bandages in place.	Safety pins 1 1/2" long.	None.	12 to 15.
For cutting bandages and dressings, or for removing clothing from injured body surface.	Razor blades, single edge.	Sharp knife or scissors.	3.
For cleansing skin.	Toilet soap.	Any mild soap.	1 bar.
For measuring or stirring solutions.	Measuring spoons of inexpensive plastic or metal.	None.	1 set.
For emergency lighting. Wrap batteries separately in moisture-proof covering. Don't keep in flashlight.	Flashlight. Flashlight batteries.	Candles.	1. 3.

NOTE: To sterilize substitutes, wrap in square cloth, aluminum foil, or brown wrapping paper, and place in 300° oven for one hour.